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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,702	03/26/2004	Georg Erhard Eggers	3000.0042C	8146

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EXAMINER	
TRAN, ANTHAN	

ART UNIT	PAPER NUMBER
2827	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/809,702	EGGERS ET AL.	
	Examiner	Art Unit	
	Anthan T. Tran	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 March 2004* is/are: a)☒ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's response filed on November 19, 2007 in which claims 2-3, 5, 13-15, and 17 has been entered of record.

Drawings

2. Previous objection to the draws is withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-9, 12-13, 15-21, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Woo et al. (US Pat. 6,373,768).

Regarding claims 1 and 13, Fig. 10 of Woo discloses a device for controlling one or more memory modules, the memory device comprising: a first memory module [610] with a temperature sensor configured to detect the temperature of the first memory module [col. 13, lines 1-2], the temperature sensor being arranged in the first memory module [col. 13, lines 1-2]; a second memory module [620] with a second temperature sensor [col. 13, lines 1-2] configured to detect the temperature of the second memory module, the second temperature sensor being arranged in the second memory module

col. 13, lines 1-2 ; a measurer [built-in 640, col. 13, lines 2-4] for determining temperatures of memory device among the detected temperatures [col. 5, lines 14-24], the respective temperatures of the first and second memory modules being passed to the means for determining the temperatures [passed to controller 640]; and a memory control module [also 640] connected to the first and second memory modules [610, 620] via the measurer [the measurer (built-in 640) measures the actual temperature of the memory module [col. 13, lines 2-4], and base on the measured temperature, the controller performs an operation to lower down the temperature. Therefore, it is inherent that the controller communicate with the memory modules through the temperature measurer], the temperature being supplied to the control module and the memory control module [640] being configured to initiate an adaptation operation [cooling down operation], in the event that the determined temperature exceeding a predetermined value [threshold temperature] [col. 13, lines 7-14].

Woo clearly discloses measuring actual temperatures of each memory module [col. 5 lines 15-24, and col. 13 lines 1-4], and if the measured temperature is higher than a predetermined value [threshold temperature], the memory controller [640] will activate the cooling system. Woo doesn't specifically disclose measuring the highest temperature. However, it's inherent that Woo does teach measuring the highest temperature (please refer to Response to Arguments).

Regarding claims 3 and 15, Fig. 10 of Woo discloses a method for controlling one or more memory modules, the method comprising: transmitting temperature signals from first and second memory modules to the means for determining an actual

temperature [col. 13, lines 4-7], the temperature signals corresponding to respective temperatures of the memory modules; determining an actual temperature among the memory modules from transmitted temperature signals [determined by controller 640] communicating the temperature signal corresponding to the highest temperature to a memory control module [col. 13, lines 7-8]; evaluating the temperature signal corresponding to the highest temperature; and initiating an adaptation operation, in the event that the temperature of the highest memory module exceeds a predetermined value [threshold, col. 13, lines 7-14].

Woo clearly discloses measuring actual temperatures of each memory module [col. 5 lines 15-24, and col. 13 lines 1-4], and if the measured temperature is higher than a predetermined value [threshold temperature], the memory controller [640] will activate the cooling system. Woo doesn't specifically disclose measuring the highest temperature. However, it's inherent that Woo does teach measuring the highest temperature (please refer to Response to Arguments).

Regarding claims 4 and 16, col. 9 lines 20-24 and lines 33-39 of Woo discloses wherein the number of commands per unit time transmitted to the first and second memory modules is reduced by the adaptation operation [as disclosed by Woo, the waiting period for the next command increases during the adaptation period. More waiting time means less command will be processed per a given time period. Woo also discloses the performances is reduced or prevent memory access during adaptation period].

Regarding claims 5 and 17, col. 11 lines 25-26 of Woo disclose wherein a cooling unit is activated by the adaptation operation.

Regarding claims 6 and 18, col. 9 lines 58-65 of Woo disclose wherein a number of memory refreshes per unit time is increased by the adaptation operation.

Regarding claims 7 and 19, col. 9 lines 33-42 of Woo disclose wherein one of the memory modules is deactivated in a predetermined manner by the adaptation operation [preventing memory access, and turn off no-essential circuitry].

Regarding claims 8 and 20, col. 9 lines 33-35 of Woo disclose wherein a system is ramped down [reducing performance] in a predetermined manner by the adaptation operation.

Regarding claims 9 and 21, col. 10 lines 14-16 and col. 13 lines 7-8 of Woo disclose wherein the temperature is binary-coded [0,1].

Regarding claims 12 and 24, col. 10 lines 37-38 of Woo disclose wherein the temperature is converted into an analog temperature signal.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 10-11 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al. (US Pat. 6,373,768) in view of Nam et al (US Pat. 6,597,614).

Regarding claims 10-11 and 22-23, Woo discloses all claimed invention but does not specifically disclose wherein the temperature is converted into a frequency-coded temperature signal and also converted into a pulse-width-coded temperature signal. Woo discloses the temperature can be converted into analog and digital signal [col. 10, lines 37-38 and col. 13 lines 7-]. Even though Woo does not specifically disclose the temperature is converted into frequency-code signal and pulse-width-coded signal, it's well known in the art that analog signal is inherently a frequency-coded signal, and a digital signal is a pulse-width-coded signal. In addition, Fig. 5 of Nam discloses a self refresh circuit for semiconductor memory device having temperature sensor, wherein plurality of frequency-coded and pulse-width-coded signals represents different temperature [different frequencies for temperature from -10°C to 90°C.

Since Woo and Nam are both from the same field of memory device having temperature sensor, the purpose discloses by Nam would have been recognized in the pertinent art of Woo.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to convert a temperature signal into frequency-coded and pulse-width-coded signals for the purpose of effectively detecting each different temperature.

4. Claims 2 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al. (US Pat. 6,373,768) in view of Barrow et al. (US Pub. 2002/0131225).

Regarding claims 2 and 14, Fig. 10 of Woo discloses the first and second memory modules [610, 620], each having temperature sensor [col. 13, lines 1-2] to detect temperature of the memory modules and transfer the temperature in form of digital signals to controller 640, where whether the maximum detected temperature is exceeded the threshold temperature is determined. Woo doesn't specifically disclose the temperature signal is in pulse-width-coded form, and a wired OR circuit to combine the pulse-width-coded temperatures signals to determine the highest temperature. However, Fig. 1 of Barrow discloses a semiconductor memory device having temperature sensor [12-14, paragraph 0012] wherein temperatures are represented by pulse-width-coded [$V_{CONTROL}$ is high or low, paragraph 0012 (last sentence), a pulse-width signal is inherently created when $V_{CONTROL}$ signal is high for a period (when local temperature is higher than predetermined level) and then low for a different period (when local temperature is lower then predetermined level)], and a wired OR circuit [28] combining pulse-width coded temperature signals [$V_{CONTROL1} - V_{CONTROL3}$] to generate a signal corresponding to whether or not the highest local temperature exceeds a predetermined level. According to Fig. 3 of applicants, temperature signals TS1 and TS2 are represented by a high-low signal. Applicant disclosed that TS1 and TS2 are combined by an OR circuit. Inherently, an OR circuit outputs a high logic when either or both TS1 or TS2 is/are high. OR circuit [28] of Barrow performs equivalent function of outputting a high logic one or all signals [$V_{CONTROL1} - V_{CONTROL3}$] is/are high. When a

signal $V_{CONTROL}$ is high, a local temperature is exceeded a predetermined level. It's inherent that the maximum temperature that temperature sensors [12-14] detected is compared with a predetermined level. Therefore, the highest temperature is inherently detected whenever the OR circuit output a high logic.

Since Woo and Barrow are both from the same field of memory device having temperature sensor, the purpose discloses by Barrow would have been recognized in the pertinent art of Woo.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine temperature signals by an OR circuit for the purpose of outputting a high logic when one or both temperature signal/s is/are high.

Response to Arguments

5. Applicant's arguments filed on November 19, 2007 have been fully considered but they are not persuasive.

Applicant argues that Woo doesn't disclose a means for determining or a measurer configured to determine the highest temperature based on the temperatures from memory modules pass to memory controller. Applicant is reminded that the claims are examined in light of their broadest reasonable interpretation.

Applicant's invention is to have temperature measurers to measures maximum temperature of plurality of memory modules. If the maximum temperature is higher than a predetermined value, a memory controller activates a cooling system to lower down the memory device's temperature. According to Woo, plurality of temperature sensors

built in plurality of memory modules [610 to 630, col. 13 lines 1-2], a memory controller [640] communicates with temperature sensors to determine [a temperature measure is inherently built-in] actual temperature of memory modules [col. 13 lines 2-4]. If the actual temperature is higher than the predetermined value [threshold temperature], the memory controller will activate cooling system to lower down the memory device's temperature [col. 6, lines 22-26, col. 12 lines 62-67].

Examiner agrees that Woo doesn't specifically disclose measuring the highest temperature, but it's inherent that Woo's device measures highest temperature. For example:

Let says predetermined value = threshold temperature = TT = 90 degree.

Let says highest temperature measured is HT.

Let says Woo's temperature measured is WT.

Applicant's Claims:

If HT < TT → adaptation operation isn't activated.

If HT > TT → adaptation operation activated.

Woo's Teaching:

If WT = 70 → adaptation operation isn't activated.

If WT = 85 → adaptation operation isn't activated.

If WT = 91 → adaptation operation activated.

Therefore, 91 is the highest temperature that Woo measure at the time. Woo's highest temperature is the temperature higher than threshold temperature. In addition, the both applicant and Woo devices perform equivalent function to activate cooling

system when the temperature of memory device exceeds a threshold temperature. Therefore, applicant's argument is fully considered, but it is not persuasive.

Applicant also argues that Nam and Barrow also fail to disclose a measurer configured to determine a highest temperature of temperatures detected by temperature sensors of the memory modules. However, Nam and Barrow doesn't have to teach this limitation claimed in claims 1, 3, 13, and 15 because Woo already taught this limitation as mentioned above. Overall, all applicant's argument have been fully considered, but they are not persuasive.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthan T. Tran whose telephone number is 571-272-8709. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, AMIR ZARABIAN can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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